Discussion on MOOC Instructional Design

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Abstract. This paper introduced the requirements of instructional design based on the four elements of MOOC, then it is proposed ideas and principles of MOOC instructional design. According to these, a teaching design method based on the traditional course are given.

Introduction

MOOC, "Massive Open Online Course". These four elements not only depict the difference between the MOOC education and traditional education. At the same time, but also determines the special of instructional design.

Requirements of MOOC Instructional Design

"Fragment, Modular" for "Massive" and "Open"

MOOC course open to students registered, compared with the traditional teaching, not only the largest number of students, also means that the diversity of students. The most prominent performance of this diversity is the difference of students' ability of learning, learning basic, learning environment and requirements of this course. For the course content, for example, some students are starting from scratch; while some students might have mastered much of the content of course, are just to update knowledge. For learning process, some students can guarantee a week have a fixed learning time, and some students may only use mobile terminal, use the fragment time complete the study.

Therefore, in the teaching content, modular design are emphasized. In the MOOC videos, each small video self-enclosed, around a concept, or a principle, or a topic, gradually thorough, steadfast, relatively intact. In time, usually in 3 minutes to 10 minutes. The advantage is that each video is very short and concise, complete with a video learning does not need too long time, convenient to students have enough time and easily distracted, is conducive to students such as car, school work, and other debris to make use of the time to complete the study. At the same time, the modularization of knowledge makes content subject, like a dictionary, divided into more distinct, conducive to the students quick positioning the information that needed to learn and understand, to facilitate students targeted choice to learn or reinforcement content. In a sense, can meet the demand of diversified learning, also can improve the learner's learning efficiency.

"Interaction, Various Forms" for "Online"

MOOC are completed on the network, teachers in the process of teaching can't see the face of students, so they give the lessons only according to the basic assumptions of its members, presupposes the difficulties that students may encounter in the process of learning, and respond based on the teaching experience. If MOOC still according to the traditional way of online courses, video last tens of minutes or even an hour or two, there is no interaction. When students learning, open the video, like to watch the film to see the teacher and learning after close the video, the faculty and students, students and other students had nothing to do. So, the attention of students, learning efficiency, as well as the course of rate cannot guarantee.

So when doing MOOC instructional design, we must think of it from the online learning students’ point of view. Such as, the process of interaction between the students and teaching content, interaction between teachers and students, and reasonable decomposition of course content to form
a modular small knowledge. So it is convenient for teachers to choose the appropriate time node, design rich variety of teaching activities online based on the features provided by the MOOC platform. For example, in the process of a certain knowledge of video playback, interspersed with little homework, or let students watch the video with the problem, or to remind students check the concepts and ideas that had just seen; After the interpretation of knowledge points, penetration testing, seminars, etc. In this way, it not only can keep the learners' attention effectively to consolidate and test students' study effect, can also through the faculty review, peer response and self-evaluation to form the interaction between teachers and students, students and students.

"Theme focused, Content integrity" for "Course"

Despite the outstanding advantages of MOOC is convenience of fragmentation of students from the study, however compared with the traditional online courses or micro class, MOOC pay more attention to the course concepts. For teaching organization, the complete teaching of a project is emphasized. Meanwhile, on time control, contrary to online courses that have no requirements and schedule. There are some relatively strict rules in MOOC. For example, every course has a specific start time, as the "term" of the school, if miss this semester, it must listen in next semester, etc. In general, only a chapter are played in a week, to ask learners to reasonable planning their own learning progress. In addition, students have to give the homework or exams at the same time of self-study even before the time prescribed by the faculty.

These features require reasonable planning and designing. Teachers need to think about what students need to master in one lesson or one week, what logical order needed to get the most easily absorbed. That is to say, at the time of division of knowledge, considering the students' learning process. When making MOOC video, It is also needed to consider how to make each knowledge point clear, complete. For a video, logic analysis ability of the specific topic or the knowledge content are so important to the teacher.

Ideas and Principles of MOOC Instructional Design

In order to achieve the MOOC instructional requirements proposed above. Teachers should be decompose teaching content according to certain principles in the process of teaching design, form an appropriate length, independent of each other series of knowledge points, take the teaching contents apart, help students integrate knowledge fragment, relevance and systematic. So, how to decompose the teaching content? we can apply a modular design ideas of teaching.

Modular Instructional Design

Modular instructional design idea from information system design, simple to say, it is get some elements in the system together, constitute a subsystem with specific functions, then combine the subsystems and other products elements, constitute the new system, produce a variety of products with different functions or the same functions but different performance.

Using modular design ideas into MOOC instructional design, doing the teaching content of course and organization it dependent on the division of the internal logic relationship, forming the relatively little knowledge video. That is a relatively independent teaching module. By combining the teaching module, forming a number of collection, namely MOOC classes each week or each content. According to the teaching process of gradually thorough, arranging sequence of composition teaching of every content serialization, thus forming a complete MOOC course.

The modular design makes alternating between each module combination is more flexible and convenient. For students, according to their own requirements definition exclusive learning path, personalize learning. For teachers, complete the adjustment and transformation of the teaching content without lost. For example, when one of knowledge or problem set are not satisfied by teachers, this part only need to reset and other content will not be affected.
"High Cohesion and Low Coupling" Decomposition Principle

The decomposition of teaching content under the guidance of modular teaching design. Then what appropriate modular decomposition is? Here, we should follow the decomposition principle "high cohesion and low coupling".

"Cohesion" is the correlation between degree of measure among components of the module. Module internal correlation degree is higher, the higher the degree of cohesion. It is introduced into the teaching design, the more focus on topic of module, the less are redundant relations and concepts, the cohesion degree is higher. Obviously, high cohesion is more beneficial to students in the understanding of a particular topic, focus on information, and not to the loose structure and redundancy of information. During the decomposition of the contents, therefore, should focus on a topic for organization of content, reduce the content of granularity, try to be a theme is a module, improve the cohesion of the module.

The link between the "coupling" refers to the module content. For example, in a module of knowledge teaching, references to other teaching contents modules, so there is a coupling relationship between the two modules. The more references between modules, the higher correlation degree. Obviously, when there are coupling two modules, students will need to put together the two modules. The low coupling means that students can be independent learning of each module. Therefore, in general, it should reduce the coupling degree of the module, it will be a complete impression on the knowledge after students learn, it is not refer to the other modules.

In spite of the teaching content of decomposition, it shall try to follow the principle of "high cohesion and low coupling". But the segmentation module is too thin, the excessive pursuit of high cohesion will be rapid increase in the number of modules, make learning more scattered, lack of integrity. So, according to the actual situation of teaching content, reasonable decomposition.

Teaching Design Method based on the Traditional Course

As general speaking, the construction of MOOC are prepared based on the existing traditional courses in most situation. In other word, there is construction basic of this course, course information mostly have been digitized, such as a full range of teaching PPT, or some of the teaching resources. Therefore, on the basis of design ideas and principles of modular teaching, in accordance with the following steps, MOOC course can be rapidly formed by transfer from the traditional teaching design.

First, combing the course content, according to the second part of the decomposition principle, layer upon layer decomposition, until the knowledge points, form knowledge system tables. Among them, a knowledge only about a topic or a question. Such as, "what is a space war?", "the main characteristic of space war" etc. In general, a knowledge of video control in 3-8 minutes, the words number of corresponding notes is probably around 600-1500 words.

The second step, Handing the existing teaching resources, such as courseware, pictures, video, data, etc., and will be available material number associated with knowledge.

The third step, listing a class in the process, along with the possible questions or classroom interaction, and associated with knowledge point number, convenient for MOOC, embedding video for small practice.

The fourth step, Doing modification of the traditional discussion, associated with the knowledge, determining the discussion in the MOOC with time node, and determining the discussion of the way.

Fifth, transforming the traditional thinking in the design of course practice. For objective exercises, giving a standard answer; If it is a subjective exercises, preparing the corresponding grading standards. Convenient for students self-evaluation, mutual documentaries.

The above five steps are the basic steps of rapid forming MOOC resources based on the existing course, and to realize the rapid transformation of the traditional courses. But the MOOC construction is far more than that. The construction and innovation of MOOC in the future must break the traditional thinking, introduced different conventional Instructional design.